## Space Weather Forecast

Issued on Saturday, 10 August 2024 at 01:25 Local

**This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales**

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### Space Weather Forecast Headline: Moderate solar activity expected. Occasional Minor to moderate geomagnetic storms likely, mainly today and tomorrow (10 and 11 Aug).

### Analysis of Space Weather Activity over past 24 hours

**Solar Activity:** Solar activity has been Moderate with five low level M-class flares observed in the past 24 hours. The Earth facing side of the Sun currently has nine numbered sunspot regions. Unusually a large number of these regions are magnetically complex or very complex, especially one impressive region that is almost centre disc. Most of the flare activity of the period originated from these complex or very complex groups, although one simpler region also contributed.
The largest flare of the period is expected to have produced a CME, which is likely to have an Earth directed component. Once imagery is available an analysis will be undertaken.

**Solar Wind / Geomagnetic Activity:** Slow wind conditions mostly persisted through the period, although wind speeds did touch into slightly elevated levels at times. Interplanetary Magnetic Field was Weak while the north-south component was Weak and variable in direction. Geomagnetic activity was Quiet.

**Energetic Particles / Solar Radiation:** The count rate of energetic particles (high energy protons) was at background with no solar radiation storms observed.

### Four-Day Space Weather Forecast Summary

**Solar Activity:** Moderate to High solar activity is forecast, with occasional Moderate-class flares expected and a chance of isolated Strong-class flares.

**Solar Wind /Geomagnetic Activity:** There is potential for multiple CMEs to arrive today (10 Aug), but confidence remains low due to complicated analysis. Additionally, a CME associated with the Strong flare on the 8th, may arrive at Earth later Day 2 (11 Aug). The expected CME from the largest Moderate class flare on the 9th is likely to have an Earth directed component, in which case a CME may arrive through day 3 (12th). Therefore it is likely there will be some CME influence through Days 1-3 (10-12 Aug) though confidence in the forecast is low.
Geomagnetic activity is expected to be mostly Quiet initially, with a slight chance of isolated Unsettled intervals. From today (10th Aug) through to day 3 (12th) occasional Minor to Moderate Storms periods are expected, with a slight chance of Strong storms, these most likely today and tomorrow. Geomagnetic activity is then expected to decline to mostly Quiet to Unsettled through Day 4 (13th Aug).

Issued by Met Office Space Weather Advisor, Tel: +44 (0) 330 135 4254 Email: moswoc@metoffice.gov.uk

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# Met Office Space Weather Forecast

**Energetic Particles / Solar Radiation:** The count rate of energetic particles (high energy protons) is expected to persist around background levels, but with a chance of further enhancement given the occurrence of any notable flares. This gives a slight chance of reaching or exceeding the Minor Radiation Storm level.

**Geomagnetic Storms:**

| Geo-Magnetic Storm Probability (Exceedance) | Level | Past 24 Hours (Yes/No) | Day 1 (00-24 UTC) (%) | Day 2 (00-24 UTC) (%) | Day 3 (00-24 UTC) (%) | Day 4 (00-24 UTC) (%) |
|---|---|---|---|---|---|---|
| Minor or Moderate | G1 to G2 | No | 70 | 70 | 40 | 10 |
| Strong | G3 | No | 15 | 15 | 5 | 1 |
| Severe | G4 | No | 1 | 5 | 1 | 1 |
| Extreme | G5 | No | 1 | 1 | 1 | 1 |

**Radio Blackouts - X Ray Flares:**

| X Ray Flares Probability | Level | Past 24 Hours (Yes/No) | Day 1 (00-24 UTC) (%) | Day 2 (00-24 UTC) (%) | Day 3 (00-24 UTC) (%) | Day 4 (00-24 UTC) (%) |
|---|---|---|---|---|---|---|
| Active | R1-R2 M Class | Yes | 80 | 80 | 80 | 80 |
| Very Active | R3 to R5 X | No | 20 | 20 | 20 | 20 |

**Solar Radiation Storms - (High Energy Protons):**

| Radiation Storms Probability (Exceedance) | Level ($cm^{-2}$ $sr^{-1}$ $s^{-1}$) | Past 24 Hours (Yes/No) | Day 1 (00-24 UTC) (%) | Day 2 (00-24 UTC) (%) | Day 3 (00-24 UTC) (%) | Day 4 (00-24 UTC) (%) |
|---|---|---|---|---|---|---|
| Active | ≥ S1 | No | 20 | 20 | 20 | 20 |
| Very Active | ≥ S3 * | No | 1 | 1 | 1 | 1 |
| * S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$) | | | | | | |

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